Associated risk factors for amputation were Wagner score ≥3; TEXAS score ≥2B and PEDIS score ≥2 ($p < 0.05$). No microorganism was associated with amputation, although *Staphylococcus aureus* and Gram Negative Bacilli were the ones with greater amputation rate or severity score (PEDIS, Wagner, TEXAS) at admission. Medium length of stay was 19 days.

Staphylococcus aureus infection was associated with a prolonged length of stay (25 days, $p = 0.04$). Overall, 74% of gram positives were sensitive to quinolones and 98% to vancomycin and 90% of gram negatives to cefotaxime and 95% to carbapenems.

Conclusion: TEXAS, PEDIS and Wagner wound classification can predict outcome. MRSA infection was associated with a longer stay. Empiric therapy with a combination of vancomycin and carbapenem will result in coverage of most pathogens involved in DFS.

Minimum 10-Year Follow-up of Endovascular Repair for Acute Traumatic Transection of the Thoracic Aorta

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Introduction: Thoracic endovascular aortic repair (TEVAR) for traumatic rupture of the descending thoracic aorta (DTA) appears, in the short term, to be associated with better outcome, but long term data is still lacking.

Methods: A review of a prospectively maintained database of patients who underwent TEVAR for traumatic rupture of the DTA in our unit with a minimum 10-year follow-up was performed. Follow-up computed tomography scans were performed at 1 week, at 3 and 6 months, and annually thereafter. Particular attention was focused on device related issues.

Results: Among the 53 patients who underwent TEVAR for an acute traumatic rupture of the DTA, 17 of them were at a minimum 10-year follow-up: mean age 45.8 ± 17 years [18–78], 4 women. Mean follow up was 11.6 years (range: 10.1–13.1 years). Technical success was achieved in 100% (Excluder-TAG [7], Talent [9], Zenith [1]). The distribution of the proximal landing zone was zone 2 in 4 cases, zone 3 in 13 patients. A case of inadvertent coverage of supra-aortic trunks occurred intra-operatively. An early proximal type I endoleak was successfully treated by a proximal implantation of a second stent-graft. No perioperative death was observed and none of the patients suffered transient or permanent paraplegia, cerebral complication. At a minimum 10-year follow-up, all the patients are still alive. Furthermore, follow-up computed tomography scans did not disclosed any stent-graft migration or collapse, secondary endoleak or pathologic enlargement of the thoracic aorta.

Conclusion: Our minimum 10-year follow-up study of endovascular repair for acute traumatic transection of the thoracic aorta demonstrated that the improved operative mortality of TEVAR over open, lasts over time without any device or procedure related issues.

The Influence of Diabetes Mellitus and Insulin Use on the Prevalence of AAA Among Patients Referred for Peripheral Artery Disease

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Introduction: The prevalence of abdominal aortic aneurysm (AAA) is known to be less among patients with diabetes mellitus (DM). This is supposed to be a result of a greater arterial wall thickness which reduces wall stress. The question is whether or not this protective effect can be found among patients with suspected peripheral artery disease (PAD) who were referred to the vascular surgeon.

Methods: From January 2008 till December 2012, 1956 patients with suspected PAD were referred to the vascular surgeon. After exclusion, 1697 patients, 971 men, with an average age of 68 years, were successfully screened with duplex for AAA. Their relevant patient characteristics were retrospectively gathered (sex, age, smoking habits, cardiovascular or cerebrovascular history, hypertension, DM, COPD, dyslipidemia, medication use, Rutherford classification and ankle brachial index).

Results: In the screened group, 24.5% has DM and 38% of these patients use insulin. The prevalence of AAA in the screened group is 7.0% (118 patients). Among the patients with an AAA 19.5% has DM (23 patients). Four patients with an AAA use insulin. Male sex (OR 3.1 CI 1.95–4.98), higher age (OR 11.53 CI 8.0–34.73) and smoking (OR 2.9 CI 1.82–4.73) had an independent positive influence on the variability and the prevalence of AAA in a multivariate analysis. Insulin use appears to have an independent and significant negative influence on the development of AAA (OR 0.3 CI 0.12–0.90).

Conclusion: In the screened group, DM and the use of oral antidiabetic agents have no significant relationship with the presence of AAA. However, AAA is significantly less present among those patients who use insulin. The protective effect of DM on the prevalence of AAA, as seen in the literature, might actually be dependent on the use of insulin. This effect could be explained by the fact that patients who use insulin usually have more progressed disease, which has had more influence on the vascular status of the patient. Another possibility is that the lower prevalence of AAA in patients with DM, described in the literature, does not depend on the disease itself, but on the effects of insulin use.

Effects of Preconditioning and Post Conditioning Statin Treatment on Skeletal Muscle in a Murine Model of Critical Limb Ischemia

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Introduction: Statins are widely used in the prevention of cardiovascular events, but may cause deleterious effects especially muscle pain. We wanted to investigate the effect of statins on mitochondrial skeletal muscle system in our murine model of critical limb ischemia, depending on whether the treatment is initiated before or after the onset of critical ischemia.

Methods: 30 Swiss mice, 8 weeks old, divided into 3 groups: 1 control group ($n = 10$), one preconditioning group treated with statins 30 days before ischemia until sacrifice ($n = 10$), and one post-conditioning group treated with statins 6 days after ischemia until sacrifice ($n = 10$).

Operating protocol: ligature of the right femoral artery (Day 0), followed by ligature of the right iliac artery (Day 4). The left lower limb was considered as control. Gastrocnemius muscles were analyzed at sacrifice (Day 30): mitochondrial respiration and production of free radicals in the control limb (CL) and ischemic limb (IL) were examined in the 3 groups.

Results: Analysis of control group muscles showed (IL vs CL):

- An impairment of mitochondrial respiratory chain characterized by a decrease in the maximum rate of oxygen consumption (Vmax) by mitochondria (reflection of ATP production): 7.11 ± 1.14 vs. 9.86 ± µmol02/min/g 0.86 ($p < 0.001$).

- An increased production of free radicals: 0.105 ± 0.023 vs. 0.073 ± 0.022 μM/min/mg ($p < 0.001$).

In the preconditioning group, mitochondrial respiration is restored in IL (Vmax = 8.85 ± 2.07 vs. 9.08 ± 1.89 μmol02/min/g), and production of free radicals is reduced (0.084 ± 0.018 vs. 0.082 ± 0.027 μM/min/mg). There is no difference between IL and CL. In the post-conditioning group, there is a significant alteration, both in IL and CL, with impaired mitochondrial respiration (Vmax = 5.03 ± 1.14 vs. 6.78 ± 1.29 μmol02/min/g) and increased production of free radicals (0.161 ± 0.077 vs. 0.092 ± 0.052 μM/min/mg).
Conclusion: Statins have protective effects on skeletal critical ischemic muscle in primary prevention. They have deleterious effects in secondary prevention, by alteration of the mitochondrial respiratory function and by increased production of free radicals.

Nanotopography and Plasma Treatment: Redesigning the Surface for Vascular Graft Endothelialisation

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Introduction: Current vascular graft materials in clinical use, such as PTFE and Dacron®, do not endothelialise and have low unacceptable patency rates. The importance of an endothelial cell layer on the luminal surface of a vascular graft is well-known. The influence of topographical features and surface chemistry on cellular adhesion and proliferation is recognised and under investigation. A nanocomposite polymer has been developed which has shown promise as a vascular graft material due to its compliant, biocompatible and anti-thrombogenic properties. However, despite these benefits a lack of endothelialisation is still a cause for major concern.

Our aim in this work is to investigate the potential of plasma treatment and topographical structures on the luminal graft surface to enhance the self-endothelialisation potential of a nanocomposite vascular graft material.
Methods: POSS-PCU is a polycarbonate urea urethane (PCU) with a nanoparticle, polyhedral oligomeric silsesquioxane (POSS) incorporated within it and fabricated according to published protocols. Microgrooves (MG) of pitch 25 μm were fabricated using photolithography and nanopits, Near-Square (NSQ), were fabricated using electron beam lithography. These were then embossed onto the POSS-PCU polymer and replication fidelity was confirmed using atomic force microscopy (AFM) and scanning electron microscopy (SEM). The samples then underwent oxygen plasma treatment at different powers at a fixed time (40 W, 60 W, 80 W at 60 seconds). Successful plasma treatment was confirmed by water contact angle (WCA) measurements.

Human Umbilical Vein Endothelial Cells (HUVECs) were seeded onto the treated polymer samples and cell proliferation was measured using Live/Dead Cell® staining. Immunostaining of vinculin and actin was conducted to observe cell morphology and adhesion.
Results: The embossing of the micro- and nanostructures were replicated with high fidelity, as seen by SEM and AFM. The microgrooves have a pitch size of 25 μm. NSQ was also verified to be 120nm pits with centre-centre spacing of 300 nm with ±50 nm offset in pit placement. Oxygen plasma treatment of the different samples, show that increase in power increased significantly the hydrophilicity of the samples ($p < 0.05$). These had a direct impact on giving the optimal surface on which HUVECs preferentially proliferate and adhere, with an average WCA of 68°, giving the highest HUVEC growth. HUVEC proliferation was seen to increase on NSQ surfaces over MG and planar samples, retaining both morphology and function.
Conclusion: These exciting observations indicate an important role for nanotopography and plasma treatment in the development of vascular grafts.

Cost-effectiveness Analysis of Open and Endovascular Repair for Ruptured Abdominal Aortic Aneurysm

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Introduction: Emergency endovascular repair (EVAR) for ruptured abdominal aortic aneurysm (rAAA) may have lower operative mortality rates than open surgical repair. Concerns remain that the early survival benefit after EVAR for rAAA may be offset by later interventions. The aim of this study was to analyse the cost-effectiveness of EVAR compared with standard open repair (OR) in the treatment of rAAA.
Methods: A model-based cost—utility analysis was performed estimating mean costs and quality-adjusted life-years (QALYs) per patient in the UK National Health Service with a 1-year time horizon. A decision tree model was constructed and populated with probabilities, outcomes and cost data from IMPROVE, AJAX & NOTTINGHAM trials and NHS reference cost for rAAA for 30 days mortality. Probabilities, outcomes and cost data for long-term complications were obtained from published data on elective repair of AAA because of lack data for rAAA. This method of using the best available data to make reasonable assumption in economic models is a common method used by several groups. This is to make the economic model more credible and to capture the effects of long-term complications on the cost-effectiveness of EVAR vs. OSR. The results from the model were assessed using one-way and probabilistic sensitivity analyses.
Results: The cost of EVAR and open repair combined with the cost of the long term complications over one year were £5533.40 and £5963.75 respectively. Both treatments costs were well below the lower margin of the societal willingness to pay in the UK (£20000) for one gained QALY. The net monetary benefit (NBM) for OSR was £25448.3—47442.6 compared to EVAR with NBM £18198.5—36046.1. The NBM is a recommend method to assess cost-effectiveness by the national institute of health and care excellence (NICE).
Conclusion: Performing OSR on rAAA is a cost effective strategy with better NBM when compared to EVAR. However both EVAR and OSR cost less than the societal willingness threshold for the QALYs gained.

Mid-term Survival and Reinterventions After Endovascular Versus Open Repair in Ruptured Abdominal Aortic Aneurysms

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Introduction: In elective aortic surgery, the mid-term risk of reinterventions is higher after endovascular aneurysm repair (EVAR) than after open repair (OR). In the present study we aimed to compare the mid-term reintervention free survival after EVAR and OR in patients with a ruptured abdominal aortic aneurysm (RAAA).
Methods: An observational cohort study was carried out including all consecutive surgically treated RAAA patients between 2004 and